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By- Chapman, Reuben E.

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This third in a series of three papers on the Associated Staff Training Program of the Foreign Language Innovative Curriculum Study discusses the training of Instructional Systems Consultants, describing in detail the skills necessary for proper handling of an innovative problem-solving routine. The six major skill areas, which correspond to the main stages of the routine, are identified as (1) problem explication, (2) quantification of behavior, (3) behavior modification, (4) instructional design, (5) research, and (6) dissemination and maintenance. The program's reliance on feedback and measurement is emphasized. For related discussions see FL 001 009 and FL 001 028. (AF)

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Training the Innovative Agent[1]

Reuben E. Chapman
The University of Michigan

Most of you are familiar with the time-honored way of developing a curriculum. After deciding what your topic is, you might sit in front of a blank piece of paper and write lectures and a topical outline. You probably would refer to the best authorities in the field, and you would arrange source material and readings for the students. When all is in readiness, you would expose the curriculum to students and hope for the best.

Nowadays, there is much talk about specifying objectives before designing the curriculum. Some well-known designers of instruction go so far as to recommend writing test items or criterion exams before beginning instruction! This climate makes it hard to expose oneself to the world as a traditional curriculum writer, but there are very few of us who believe it is practical actually to work in this new way.

The message of this talk is that we have found it practical to work in this way and we recommend it.

First of all, we were convinced by the reasonable argument that the traditional approach to curriculum development was actually a method for isolating the developer and the curriculum from important influences. If he has no feedback from the final audience for his work, he does not know if it is successful. The final audience is "out there" beyond the classroom or school. Information on our effects beyond the classroom is needed in order to help us

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decide what to teach. Determination of effective goals requires a reference point beyond the final examination.

The traditional curriculum approach also cuts the teacher off from student response until the curriculum is finished. At that point when students have trouble with the curriculum in the classroom, it is often too late to revise.

We were convinced that feedback was needed at all stages of curriculum development so that we could learn from our errors and make improvements. We were concerned with errors of two kinds: errors in choice of objectives and errors in method of instruction.

First we set our final goals and decided on the measures which would be our signs of success. One goal was to be so useful to schools that they would adopt our training and its products. The measure of this would be the behavior of educators who decide on school policy. If we were successful, they would find the skills we were teaching to be worth budget allotments and would create positions for people with these skills.

The next kind of success we hoped for was improvement in the complete range of foreign language skills thought to be important by content specialists. This effect will be measured by comparisons of gain scores between treatment schools and control schools, using student performance on the Modern Language Association Cooperative test of foreign language skills.

The most important outcome to us would be the successful achievement of many goals set by teachers for their students. To measure this we are keeping records of each problem and its solution in terms of student performance and teacher satisfaction.

Having stated our ultimate goals and having been explicit about how we would recognize them, we had to state the objectives of the curriculum that we

thought would train people to reach those goals. This process was empirical and has just been described briefly by Roger Scott. The decisions and actions in the problem-solving routine he discussed constitute the objectives for our curriculum. We tried to specify as many as possible of the sub-skills that composed the parts of the problem-solving routine. This resulted in written descriptions of approximately 100 skills.

Since these skills were highly interrelated, we grouped them into six reasonable areas. These are listed on the first page of the handout you have just received. (Three units are described in some detail on the following four pages.) They represent the main stages of the problem-solving routine: Problem Explication includes interviewing the teacher to choose a problem and state it in explicit terms. Quantification of Behavior includes many skills of translating teacher objectives into valid and reliable measures of student behavior. Behavior Modification and Instructional Design are the two main strategies for analyzing and solving classroom problems. Research involves skills in generating, conducting and reporting experimental studies. Dissemination and Maintenance includes analysis of the school as a system and the use of available and created resources, in order to spread and establish successful innovations.

It was at this point that two unusual things happened. First of all, we remembered that we had endorsed the "new look" in curriculum development - specifying objectives and writing criterion tests before developing instruction - and having remembered, we actually stuck to our resolve. We proceeded to write as many test items as we could in each of the six skill areas.

From these we put together a pre-test which covered the range of ISC skills. Some samples of questions in that pre-test appear on pages 6-12 at the end of the Appendix. In order to write these and the other test items, we

drew upon hundreds of problems which we had collected previously in talks with teachers.

The first pre-test item in the handout asks the trainee to identify whether responses in a transcript of an actual interview helped or hindered progress toward a clear statement of a teacher's problem. In the second test item, the trainee is given corrected answer sheets, graph paper and a teacher's objective; he must report to the teacher on the success of an attempted solution. The third item presents examples of ISC comments during the trial of some teaching material. He must choose the more appropriate response in each instance. These sample, respectively, the curriculum areas of Problem Explication, Quantification of Behavior and Dissemination, and Instructional Design.

We administered the complete pre-test (which runs to about 30 pages) to our trainees, to ourselves and to a control group of advanced students who were taking a School of Education course in Modern High School Curriculum. With a parallet test in hand to use as a post-test, we were flushed with righteousness. Again, we were tempted to teach.

However, the pre-test proved to be far from exhaustive. Therefore, we still needed means to know if we were teaching the sub-skills which composed the six areas of instruction.

We wrote more test items. As of today, we have written hundreds of items and expect to write more.

I will return to the hundreds of test items and their impact on the curriculum. First I want to tell you about the other unusual happening.

The second unusual happening was our choice of a training and feedback strategy. We made the first trainees integral parts of the curriculum development process and established feedback channels both from our efforts at training and from the effects of our trainees upon teachers and students in real schools.

We decided that whatever we taught, we wanted to know immediately whether the skills involved were working in the school situation. To this end, we hired two trainees at a time when we only had test items written in our curriculum. One trainee had many years of teaching experience. She has corrected many of our errors before they reached the schools and has provided many of the problem descriptions which were developed into test items. The other trainee had extensive experience in the use of behavior modification techniques with children. He was able to write many of the test items in his area of specialization and give us pointers on consulting with teachers.

With little further ado, we sent these brave souls into the field. We sought and still seek teachers who, attracted by our glowing descriptions of ISC virtues, would allow the staff and trainees to interview them. We arranged to record and transcribe the interviews. These interviews attempt to get a teacher to state an instructional problem she has. Each teacher problem goes through role-playing by the staff during a weekly class session. In addition, the trainees keep a daily log of all their activities and impressions of both training and field experience.

With all the feedback provided by these arrangements, with the two first trainees and the hundreds of test items, we feel satisfied that we have not isolated ourselves as curriculum developers in the ways mentioned at the start of this talk. In fact, the whole project is as bugged as a foreign embassy.

What is the result of this extreme emphasis on feedback and measurement? The benefits fall under two headings: (1) empirical validation of curriculum content and means of instruction; (2) efficiency in instructional design.

Our content is validated by actual use in the kinds of schools we hope to affect, and it is revised as needed. The means of instruction are validated because we revise them until they work.

Our process of instructional designing is efficient in the following ways:

1. Pre-tests tell us what skills are needed by each trainee. They need learn only what they do not know.
2. Teaching is simplified. Our many test items, when sequenced, provide such clear directions to trainees that merely attempting an answer and then finding the right answer is often all the instruction needed.
3. We, as designers of the curriculum, are presented with a means for selecting materials which is organically bound to our purposes. The test items are clear-cut guides to choosing chapters in books, programmed texts, films, tapes, etc. Now that we are getting to the teaching, we are finding it very easy to pick materials to fit the test items. We can easily and quickly tell how effective each bit of instruction is. And most importantly, we are more confident than we have ever been in our teaching careers that these learning experiences are clearly relevant.

Appendix to accompany

"Training the Innovative Agent"

The Training Curriculum

*Unit I: Problem Explication

*Unit II: Quantification of Behavior

*Unit III: Behavior Modification

Unit IV: Instructional Design

Unit V: Research

Unit VI: Discrimination and Maintenance

*These units are described in more detail on the following pages

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I. Problem Explication

Much of the ISC's time will be spent in informal interviews with teachers.

Faced with the complexities of the classroom, teachers can be discouraged from trying new strategies; their close involvement may hinder finding a solution.

The ISC will help the teacher see problems in a new light: he assures her that help is available to carry out a solution, he encourages trying a new approach, but he first starts her toward an objective description of the problem.

Working on her own, a teacher often describes problems in terms of variables she cannot control such as I.Q., poor home environment, etc. She is also tempted to move quickly to familiar or traditional solutions.

Trainees will be able to question the teacher so that a catalog of variables, relevant to problem solution evolves. He will suspend judgment on solutions until sufficient facts are in. He will encourage her to originate rather than adopt traditional solutions.

When a teacher tries a new strategy with her students, she frequently lacks clear signs of success.

The Consultant will interview the teacher to obtain the outlines of pre-test procedures and will set up clear-cut measures for recognizing success.

The ISC will have the component skills of interviewing and following up an interview. He will be able to:

--choose a good interview when it is compared with an inadequate interview.

--choose the best approximation of a good interview when given several choices.

--ask efficiently the questions which help a teacher produce needed information.

--maintain teacher interest and involvement during an interview.

--provide next steps for a teacher to work on after an interview.

--write a brief memo after each interview which:

shows a teacher how her own statement of a problem can be restated in behavioral terms

assures the teacher that the ISC has listened carefully

provides a further stimulus for the teacher to collect data as the first step in solving a problem.

Quantification of Behavior Unit

Problem	Relevant ISC Skill
Teachers are often stopped by the complexity of problems and fail to reduce them to workable parts.	The ISC will learn to do task analysis.
Sometimes teachers are criticized for teaching toward controversial, harmful or useless goals.	The ISC will learn to aid teachers in establishing objectives
The mass of test data collected in schools can easily overwhelm a teacher.	The ISC will help the teacher choose proper uses of test data that have already been collected.
Sometimes a teacher needs a test or measure of behavior that is not commercially available.	The ISC will assist teachers in building their own tests and behavioral measures.
Failure to obtain frequent and useful measures of student performance is often related to the teacher's lack of time.	The ISC will be able to assist her in obtaining and interpreting the data, and show her a variety of techniques which students can do themselves.
Teachers and test experts are often at odds over acceptable tests and testing strategies.	The ISC will design strategies for testing and will select and construct tests according to criteria acceptable to measurement experts and to teachers.
Teachers often find it hard to interpret and present test data.	The ISC will interpret and present test data without distortion and in ways useful to teachers and students.

Behavior Modification Unit

Problem	Relevant ISC Skill
Teachers often describe students and their problems in terms of inferences which hinder quantification, manipulation, and evaluation.	The ISC will learn to translate teachers' statements into operational language.
Identifying effective reinforcers is often a difficult task for teachers	Trainees will learn techniques of identifying available and potential reinforcers for education
Teachers may unwittingly maintain undesired behavior in students or fail to set up appropriate contingencies for desired behavior.	The Consultant will be trained in contingency management.
Often, teachers do not know effective ways of monitoring student behavior.	The ISC will learn a variety of techniques that will aid the teacher in obtaining more exact and more frequent information about her students.
Solutions for classroom problems--which appear theoretically sound--sometimes produce aversive consequences for the teacher when implemented	To insure successful solutions, the ISC will be trained to consider reinforcing aspects for both teachers and students.
Educators in the applied setting often become isolated from the stimulation and the information offered in the research setting.	The trainee will have skills in research design, and the experimental analysis of behavior, which will facilitate a continuing contact with the research community.
Solutions proposed for educational problems are often too cumbersome for the system and are dropped when the consultant leaves.	The Instructional Systems Consultant will learn techniques of maintaining behavioral change that are "tailor made" for the particular school system.

On the following pages you will find a portion of an interview between a teacher and a consultant.

The consultant's major objective is to discover the exact nature of the teacher's problem - to be exact enough that the worth of the proposed solution can be accurately determined.

For <u>each</u> of the consultant's statements in the interview, place a check in the box marked with a plus [☐ +] if the statement definitely led toward the above objective. Otherwise, place a check in the box marked minus [☐ -].

TEACHER-CONSULTANT INTERVIEW

Teacher: Next week I'm going to be presenting a unit in my first year French class on Impressionist painters, and I was told that there are several good art films available, on French art - maybe on France, some of the museums. I thought that maybe you could help me obtain a film so that when we do the unit I would have this to show to them.

Consultant: I have several catalogs of films that we could go through that might help. Right now you should tell me just what types of things you would like in the film. What things do you think it is important for the children to see?

☐ + ☐ -

T: Well, I think it would be important for them to get the background of a good deal of the cultural content of the artists of the period, and preferably in French; showing some of the works of the artists with a great deal of cultural commentary in it. Otherwise, looking at the paintings wouldn't be of much value. But if they understand the artist or something about him, his part in Paris or

the part he played in French literature of the period, this could be important - not just looking at films and being bored besides.

C: You want a lot of things about each artist, in terms of...

☐ + ☐ -

T: ...the period in which he lived, where he lived in Paris, did he paint in the provinces of France, what major works of his are well known, can you see them in the museums of Paris, or can you go to see them somewhere else in France?

C: And you are interested particularly in the Impressionist painters, like...

☐ + ☐ -

T: Renoir, Monet - the whole school and the Post-Impressionists. The whole unit is on Monet, Manet, Degas, Renoir.

C: Yes, certainly the paintings of Manet should be seen and appreciated by every French Student.

☐ + ☐ -

T: Right! And that's not the case now.

C: Suppose you were trying to make a test for the kids after they'd seen this film to see if they had been helped in any way. What kinds of things would you ask? Maybe you include something like this in the present test that you have.

☐ + ☐ -

T: Well, to be truthful, I want to use the film as a kind of embroidery on the grammar unit that is being presented. I don't know that I would want to greatly stress the content of the film itself.

It will have a conversation in French about going to the museum and seeing the Impressionists. "Who are the Impressionists?" and so on would all be in French. I would want them to understand the structures in the unit in such a way that they're not talking in the abstract about something that they know nothing about. I'd like the film to make the unit concrete.

C: What is the name of the unit?

☐ + ☐ -

T: "The Impressionists."

C: Then one of the reasons you're studying the unit is to increase their skill in grammar and vocabulary items?

☐ + ☐ -

T: Yes, certainly. If it's possible - in time - and if they can absorb that much - they could learn something about the Impressionists. Then I can hold them responsible for that. It would be difficult to test an art unit, because I don't want to just show them a painting and ask whose it is - if it's something well known, by Van Gogh or Renoir or someone like this, it is so obvious. They could

tell the difference between a Renoir and a Van Gogh. I might ask them to identify the painter, but not necessarily the title of the work of art. General questions like, "When did Van Gogh live?" They would learn this from the film. Also, "Name three Impressionist painters," and "What museum would you go to in Paris to see Impressionist works?"

C: So you sort of have a dual purpose involved. One is the grammar and vocabulary items included in the unit and the second is supplementary learning about the French culture and painting. Is that a fair statement?

☐+ ☐-

T: Yes, that's correct. That's exactly what it is.

A French teacher has, as an instructional objective, that when given the infinitive of the 10 irregular verbs listed on the enclosed test, the student will correctly write 8 of the 10 in the past tense. There are five students in her class.

a) Using the data from the attached test set "A", prepare a graphical presentation of the pre- and post-test scores. (Use the graph paper on the next page.)

b) Write a memo to the teacher explaining the success of the instruction in this area and suggesting a future course of action. (Use the blank sheet following test set "A".)

Answer: a) Your graph should have an axis for number of students and one for number of or percent of correct scores.

b) Your memo should contain the following points:

1) all of the students met the objective.

2) there was an average gain of 5 points on post-testing.

3) this appears an appropriate objective for a similar target population in the future.

4) the instruction appears effective and should be retained unless there are unidentified (in this trainee test) constraints.

You have prepared some instructional material for use in a high school class. Now you are ready to try out the material with one student to see if the material works.

In each of the conversations below, place a check beside the teacher response you feel is most appropriate.

STUDENT: Is this the French test you want me to take?

☐ 1st TEACHER'S RESPONSE: Yes, try to do a careful job. Read all the materials and answer all of the questions.

☐ 2nd TEACHER'S RESPONSE: This is some instructional material which has been developed for a French class. You are going to help us find out how well it works.

STUDENT: Shall I start working on this now?

☐ 1st TEACHER'S RESPONSE: Yes, we're ready. You can begin any time.

☐ 2nd TEACHER'S RESPONSE: First I would like to find out how much of this material you know.

STUDENT: O.K. Now I'll start on number 12. (Long pause and look of bewilderment) - (gives up and scribbles an answer in desperation.)

☐ 1st TEACHER'S RESPONSE: (before student gives up and scribbles answer) What is the problem?

☐ 2nd TEACHER'S RESPONSE: (after student gives up and scribbles answer) Now number 13.

STUDENT: I'm confused by this question. Do I circle the right answer or what?

☐ 1st TEACHER'S RESPONSE: Would it help if I wrote these instructions?

☐ 2nd TEACHER'S RESPONSE: No, match this answer with a sentence in this paragraph.

STUDENT: (looks puzzled) I probably should understand this, but this rule doesn't make sense.

☐ 1st TEACHER'S RESPONSE: Remember your first semester course? It probably was mentioned then.

☐ 2nd TEACHER'S RESPONSE: Can you tell me why the rule is confusing?

STUDENT: I can't do this; I don't know what placebo means.

☐ 1st TEACHER'S RESPONSE: Would it help if I inserted this information about what a placebo is . . .?

☐ 2nd TEACHER'S RESPONSE: Don't worry about that - go on to the next paragraph.